DOCUMENT RESUME

ED 177 047 SO 011 981

| | |
|---|---|
| TITLE | Developing Sense Perception in the Multicultural Classroom. |
| INSTITUTION | Far West Lab. for Educational Research and Development, San Francisco, Calif. |
| SPONS AGENCY | National Inst. of Education (DHEW), Washington, D.C.; Office of Education (DHEW), Washington, D.C. |
| PUB DATE | Mar 78 |
| NOTE | 87p.; For related documents, see SO 011 979-983 and SO 012 041; Appendix may not reproduce clearly due to light and broken print type of original document |
| EDRS PRICE | MF01/PC04 Plus Postage. |
| DESCRIPTORS | Class Activities; *Cognitive Processes; Discrimination Learning; Elementary Education; Experiential Learning; Food; *Inservice Programs; *Multicultural Education; Perceptual Development; *Sensory Experience; *Sensory Training; Tactual Perception; Teacher Education; Teacher Workshops; Visual Discrimination; Visual Perception |
| IDENTIFIERS | Ethnic Heritage Studies Program Act |

ABSTRACT

This guide provides group activities for teachers to aid in planning a multicultural curriculum for developing sensory perception in children. The guide emphasizes the cognitive processes involved in sorting out sensory data and the use of multicultural materials as resources for sensory experience. Activities are presented in six sections. Section I introduces the goals of the guide and discusses sensory perception as a system of sensing and thinking. Section II, Observation and the Senses, helps teachers to recall their own sensory awareness through a sense walk and presents an exercise in observing children involved in sensory experience. Activities in Section III, Touch, call for participants to explore the texture of a cornstarch/water mixture, develop a texture wordlist, examine materials of similar textures, and work with size and shape. Suggested classroom activities are included. Section IV, Tasting and Smelling, features multicultural food and cooking experiences. Section V, Hearing, presents a scavenger hunt in which participants must collect specified sounds on a cassette tape recorder. Participants also list classroom activities such as chanting, singing, listening to music from other cultures, and making instruments. Section VI, Sight, investigates patterns, symmetry, and spatial relationships. Each section presents objectives and worklists and allows participants to create relevant classroom activities. An appendix provides sample Native American recipes for the Tasting and Smelling section. (KC)

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# DEVELOPING SENSE PERCEPTION IN THE MULTICULTURAL CLASSROOM

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from the unit "Developing Children's Sense Perception:"
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SO 011 981

Far West Laboratory for Educational Research and Development
San Francisco, California
March, 1978

This learning unit is a product of the Far West Laboratory for Educational Research and Development, San Francisco, California, and its development was supported in whole or in part by the U.S. Office of Education, Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the U.S. Office of Education and no official endorsement by the U.S. Office of Education should be inferred.

The original unit from which this was adapted is part of the Flexible Learning System set of materials also developed at the Far West Laboratory under the direction of Masako N. Tanaka, with support from the National Institute of Education.

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# CHAPTER I. WHAT THE LEARNER'S GUIDE IS ABOUT

## Why Sense Perception?

Sense perception sounds like a rather straightforward subject. It involves the five senses (touch, taste, smell, hearing, and sight). It's clear that these are important sources of information about the world outside (as well as within) us. If you simply imagine yourself without one or two of them, it will be easy to realize just how much you rely on them. It's also clear that this information about the world comes in through the sense organs -- eyes, skin, ears, nose, tongue. What's not quite so simple is just how this whole process works, and what part the brain plays in it. We will talk more about this later because some background on the working of sense perception will be helpful in better understanding how your children learn through sense experiences.

Another question you might raise about working with a handbook on sense perception is, "Why teach sense perception skills anyway?" Children are naturally curious, and use their senses a great deal with or without adult intervention. (Can you think of any form of curiosity that doesn't involve the senses?) But the senses are a tool, and like any tool, they benefit from skilled use. So work with sense perception skills is important in making that tool more effective, more efficient, and more satisfying.

For the multicultural classroom, the activities relating to sense perception can provide access to the rich resources available in many different cultures. The many ways in which things can be smelled, tasted, felt, etc. are exciting experiences for both the child in a particular culture and other children who are not as familiar with the same material.

Further, there is a definite relationship between the use of the senses and cognitive development. We will give you more specific information about the skills that you teach through sense experiences in a later section.

## Goals of this Guide

These are the goals of the unit:

1. To recall and expand for the adult learner sense awareness experiences and the need for attention to and valuing of them at the adult level.

2. To increase the verbal sense "vocabulary" of the learner.

3. To develop the learner's ability to provide multicultural sensory experiences to children that also develop cognitive skills.

4. To develop the learner's ability to study the child's conceptual use of sense, particularly in these areas: observing, naming (using languages familiar to children in the classroom), matching, sorting, grouping, ordering, classifying,

and "wanting to enjoy and know about new sense experiences."

5. To develop the learner's ability to use this information to plan and provide sensory activities that specifically support and extend the cognitive growth of individual children.

6. To enable the teacher to develop his or her own curriculum for sense perception, by developing checklists of objectives, wordlists, sensory activities, observation, and individualized follow-up.

## Sense Perception: A system of sensing and thinking

We said before that the five senses are an extremely important source of information about the world, and that this information comes in through the sense organs. This seems reasonably clear. What's not always so clear is what happens to this information once it gets picked up by a sense and the form of this information. Though a whole set of nerves, as well as the sense organs themselves, are involved in picking up and delivering the raw data, there's a different system that makes use of the data, processes it, or interprets it. How well we use the raw data picked up by the sensory system has to do with the brain, or the part of the brain involved in thought. This is all elementary; you've known something about it since elementary school. But it's also so subtle and complex that a lot is still unknown about how vision, for example, works.

But it's important to know a little about the way sense perception works physiologically. Suppose you have a group of children who are having trouble sorting materials of different texture. You think to yourself, well, they need more experience with texture-- touching and maybe looking at textures-- because their sense of touch doesn't seem to be very sophisticated yet. Now you're on the edge of trouble. You have the right plan of action-- more experiences with touch, but the wrong reason behind it. Because it's probably not the way their skin functions as an organ of sense. They may feel a lot of differences (though with some sense problems, there are physical limitations like lack of fine or gross motor control). The raw data may be coming in quite reliably through their sensing mechanism.

What's lacking is a thinking process to make use of or to organize the information coming in. A few weeks and many textural experiences later, you are excited to notice some change in their use of those texture materials; the children notice or compare things more, or can group similar textures, or sort them according to some quality. So it's something in the brain and the way it works that you're excited about, not the development of the sensory organ itself. That's really important to keep in mind throughout this guide. What we are doing in developing "sensory perception" is not improving the operation of the eyes in relation to seeing, or the ears in relation to hearing, but increasing the capacity of the mind for receiving and using the raw sense data sent to the brain.

(You might recall here, too, that the brain also sends out instructions to the sense organs, in order to get back new or different information.) Thus, we work with children in sense perception to develop those same skills that get applied directly to "math" or "science" or "language arts": the capacity to pay attention, to notice, to observe, to compare and contrast, to classify, to predict, to isolate, and to make generalizations about what their "senses tell them."

Now you've "heard" the idea repeated in several different ways, and that's an indication of how important a point it is. In this guide, we are working on developing children's thinking through the use of lots of sensory experiences, each of which gives the child's mind new sources of information about the world he or she lives in. In particular, we will be working on the use of multicultural materials as a resource to provide a richer and wider variety of sensory experiences.

Check-up

This is the end of Chapter 1, which is your introduction to this guide on Sense Perception. It would be a good idea to go back and make sure you are clear about: (1) the goals of this guide, and (2) the relationship between the sense and the thinking process. To give yourself an idea where you're starting from, write down here a list of ways that children use their senses (and their brains) to learn about the world.

| Touch | Taste and Smell | Hearing | Vision |
|---|---|---|---|

This list is not for your instructor unless you want to share it or ask some questions about it. It is for you to go back to later and see what new ideas you've gotten as you work through the guide. Don't be afraid to make notes on whatever comes to mind.

# CHAPTER II. OBSERVATION AND THE SENSES

## Getting ready to think about Sense Perception and Young Children

This chapter should be fun. As you can see from the subtitle, the experiences you'll encounter in Chapter II are designed for you as an adult learner.

First, you'll have one extended experience with the use of the five senses: touch, taste, smell, hearing, and vision. We call it a "sense walk." The purpose of the "sense walk" experience is to give you more information about your own use of these senses, which you can later apply to the development of sense perception skills with children. You'll also be asked to do an observation of children using material rich in sensory experiences (that is, "messy").

## Objectives for this Chapter

1. To be able to use the sense experience ("sense walk") to increase your own sense vocabulary, and to pay increasing attention to sense awareness.

2. To be able to name, describe, and classify a variety of sense perceptions according to criteria to be presented in the information on the "sense walk."

3. To be able to identify the cognitive skills children are using while engaged in a primarily child-directed experience with sense-"rich" materials such as clay, water, sand, or cooking ingredients (often regarded as "play" activities).

## Sense Walk

The purpose of the sense walk is to recall and expand your own sensory awareness as a preparation for working on sense awareness skills with children. Most of us have too little time for paying attention to and taking pleasure in touch or taste or sound. Every once in a while there's a really lovely sunset, or you actually listen to the sound of water rushing into the bathtub (instead of wishing it would fill up the tub faster). So much is coming in through the senses most of the time that only a small amount gets conscious attention. But by deliberately changing

the focus of your attention, you can rediscover sense pleasures. As a teacher, you need to know that those pleasures (like the children messing with clay) are also serious and important to thinking as well as making someone feel good.

So although this chapter is meant to be fun, it's also meant as a serious part of your training in sense perception. The most important direction we can give you for doing the Sense Walk is that you enjoy it at the same time that you are putting real effort into it. Whenever possible, the activities and materials should have a multicultural perspective. For example, if your children belong to a particular culture try to locate and visit neighborhoods where you will find food stores, decorations, language, music, etc. which are familiar to them.

## Directions for the Sense Walk

You'll work on this exercise with a partner, either your instructor or another learner.

You are going to be doing two sorts of exercises. One is a blindfold walk, in which you will focus on using all your sense except sight. Before you go on the blindfold walk, you'll have a chance to use your visual sense to gather information. Take writing materials. Go to a nearby park, public building or a community area. When you arrive, find a comfortable place to sit. Take out writing materials, and do the following:

Step 1. Pick out three objects* you can see from where you're sitting. Write down at least five, but use as many words as you can that describe (but do not name) those objects. Use the visual sense only.

1.

2.

3.

4.

5.

*Note: If possible, choose location which provides objects from different cultures, e.g., architecture, statues, store window displays, etc.

Questions:

Did you include information about size (small, huge, tiny)?

Shape (regular, irregular, triangular, jagged)?

Color (dappled, mottled, deep, glossy)?

What about the direction or level of the objects (low, southwest, adjacent, perpendicular to)?

What sort of structure do your objects have (layered, crystalline, branched, tubular)?

As you look over that list of word descriptions, notice how sophisticated our language can be in describing what we can see. Behind those words lie a rich experience with vision and the mind's careful organization of those experiences.

Now put those notes away and get ready to think about the blindfold walk. You've been concentrating very hard on your visual sense, so it should be a distinct shift. You're going to focus on one thing during the blindfold part of the Sense Walk: Using your senses (except sight) to identify things that are around you.

There's nothing there that sounds too strange, is there? Good, because it should be fun, and a little challenging.

Step 2. Choose which person will be blindfolded (flip coins, draw straws, pull rank, or whatever method works) and which one will lead first. Before placing the blindfold, let the person look around the area. At this point you can either lead the blindfolded person to a new location or stay in the same location, but turn the person around so he or she is in a different relationship to the things around them. Then follow the directions for Step 3.

Step 3. This exercise is very much like Step 1, except now the blindfolded person will be using all senses except sight. The blindfolded person will find three objects* and do the following for each object:

a. Name the object (or make a good guess).

b. List any sense clues that are used for the identification and/or that seem distinctive (smell, taste, sound, touch).

Your partner will record these under the proper sense categories, as indicated on the next page. Partners can discuss any questions about what to record and where. The main purpose is to collect information about each person's use of the senses in the blindfold situation. You might want to try to locate the same three objects you chose for the visual description (Step 1), but it's not necessary.

*Provide objects from different cultures, e.g., utensils, musical instruments, pottery or lacquer ware, etc.

IDENTIFICATION CLUES SHEET FOR RECORDING

| Object | Touch | Taste | Smell | Sound |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |

Go on to Step 5 as soon as you finish recording identification clues for all three objects. (The first person will go through the whole blindfold walk before you switch places.)

Step 4. Change roles now and repeat the earlier steps.

Step 5. When you finish the Sense Walk, you're ready to go back to your school, or a nearby coffee shop, or someone's house to look over the results. Here are some ways to use the exercise you've just done, to further expand your action and your verbal sense "vocabulary."

Note: The exercise you've just completed is meant to expand what we call a sense "vocabulary." This vocabulary has two forms: one literally of words that convey sense information; the other a vocabulary of actions, the actual use of your five senses to gather information.

## Additional exercises based on the Sense Walk

Look over the words you listed as clues to the identity of three things in your environment. Add to these your list of words based on visual clues. Now see what happens if you rank the five senses according to which you found most useful in identifying (or describing) those objects. How does your list compare to your partner's? What do you think you might conclude if the lists are similarly ranked? Are the lists similar at the beginning and end (highest and lowest preference), but more distinct in the middle area? What does this suggest? Can you think of situations where smell would become an extremely important sense for gathering information?

## Preferred Sense Mode

There's a great deal of recent research about individual differences in reliance on each of the senses for information. Much of this research centers around what is called "preferred sense mode" in relation to learning. Quite simply, this is research to determine whether children show a pattern or preference for one or more of the senses in their approach to learning. For example, one child seems to be able to learn the words of a song better through hearing them than seeing them. Or one child may show a preference or greater need, for touching the letters of the alphabet, whereas another may need to work with the sound of the letter, or work on recognizing letters by sight.

Of course, it's not quite as simple as all that. The problem is to figure out why one approach works better than another. The child who can identify letters by touch may have a better developed set of concepts (naming, matching, discriminating, sorting, etc.) connected to touch than, say, to vision. But on the other hand, there may also be a particular obstacle to the visual information --the letters may be too far away, or printed smaller, or appear not so attractive. But let's say that you've got all those variables under control, and a child shows a pattern of preferring to find out things with her hands rather than with her eyes or ears. That seems like useful information that a teacher could use in a couple of ways. First, you as the teacher might decide to make tasks

easier for that child by introducing new or difficult ideas through work with the preferred sense. Sometimes, that alternative might be really useful. Another way to help would be to emphasize the senses that the child doesn't use in as sophisticated a way, so as to strengthen the cognitive tools for using those other senses. Like any other part of teaching, the real skill is in knowing when to work from strengths, and when to support and strengthen weaknesses. Pay some attention to children's preferences for putting their senses to use, and you've got another tool for your teaching kit. Don't forget, by the way, that preferred sense mode mostly concerns how the thinking brain uses what comes in through that sense, and not how well the sense itself is operating. The eyes may be seeing those letters very clearly, but the thought process can't cope with all those fine little squiggles and lines.

Your own experience during the Sense Walk may give you some more insight into preferred sense modes.

## An Exercise in Observing Children Involved in a Sensory Experience

In this exercise you will observe a small group of children working with a sense-rich material such as clay, sand, or water. The purpose of the observation is to make you more keenly aware of the way in which children explore through their senses, and how this exploration is used in cognitive development. Arrange with your instructor to observe a group of about five children, preferably in your own classroom. Set up one of the following experiences: water play, sand play, clay, etc. You may have these sorts of activities all the time; the point this time it to observe the children's behavior very carefully, according to the directions that follow. If you have sand or water play in your room as an ongoing activity, you may want to use that for your observation. You can even make discoveries about something very familiar by paying special attention to it.

## Directions for the Observation

You should allow yourself ten minutes of uninterrupted observing. If this seems impossible, try two sessions of five minutes each. It's really important to observe continuously over a period of time, so you can see the direct development of ideas and actions. Using the form provided, write down as directly as you can any conversation or actions such as the following:

1. identifying objects and materials (either by name or by function)
2. sorting of objects
3. matching of objects
4. comparing and contrasting one object or experience with another

5. classifying or grouping of objects or experiences

6. predictions or explanations of why things behave the way they do.

Obviously, you will be able to write down only a minute portion of the thinking that actually goes on, but get down whatever you can. The children's exact words are often significant in telling you what they are really perceiving so that the child's own language should be recorded as accurately as possible (in bilingual programs, you may need to get help later in understanding what is said). As soon as you can (either while you're observing or right after) jot down next to each observation the name of the sense organs (sense mode) that you think were primarily being used in providing the child with data (and motivation) for the cognitive process you identified. (If possible, you might do your observation with another person, or your instructor, so that you can compare notes.) Before you meet with your group, take your notes and transfer them to the chart that follows, so you can get a schematic picture of the cognitive skills that were used.

| Cognitive Skill | Conversation | Action | Sense Mode |
|---|---|---|---|
| 1. identifying objects and materials (name or function) | | | |
| 2. sorting of objects | | | |
| 3. matching of objects | | | |
| 4. comparing and contrasting one object or experience with another | | | |
| 5. classifying or grouping of objects or experiences | | | |
| 6. predictions or explanations of why things behave the way they do | | | |

Discussion with

Now that you've done all this writing, take it to your group and get some feedback. Compare your notes and talk about you observations and the way you've filled out the chart. Do your notes suggest any follow-up activities, or tell you anything about individual children and their perceptual skills? Do you notice any patterns of perception in the group or in individual children--any greater attention to one sense than another? Which sorts of thinking skills seem to occur most frequently? Which least? How much goes on that involves several thought skills at once? For children who do not use your language, what did you learn about them through this activity?

Check-up

*Write a one-page comment about how you were affected by the Sense* Walk, both as an adult learner and as a teacher of children. Did you notice anything about your responses that was quite different from your partner's? How do you feel about your use of each of the five senses? How does your cognitive use of your sense data differ from that of the children you observed?

# CHAPTER III. TOUCH

## Objectives for the Learner

After working through this chapter, you should be able to use multicultural materials in the following ways:

1. Give an experience in which you have used the sense of touch, and list the skills you used such as sensing texture, shape, size, etc.

2. Give an objective describing a touch skill, modify it to make it easier or harder.

3. Give a way to observe a particular touch-skill, and use it to find levels of skill for children in your classroom.

4. Give a description of a learning experience for children that uses the sense of touch, create that learning experience for children in your classroom.

The above four objectives are "teacher-objectives" in that they describe skills that you need as a teacher to use some sense perception materials. In this chapter we are mostly concerned that you become comfortable with using learning materials that others have developed. But in following chapters, we are going to place more and more of the responsibility on you for the creation of learning experiences.

Besides the four "teacher-objectives," we have a more general attitudal objective--we want to "turn you on" to touch. We hope that as you work through this chapter, you will start meeting the world with newly sensitized skin; touching, rubbing, stroking the myriad textures around you.

## General Plan

We decided to start working with you here on using the sense of touch with young children for two reasons. First, it is a rather neglected area of sense perception. Second, it is difficult enough and rich enough(particularly with multicultural materials) to serve as a good model for teaching sense perception.

If you start to collect words about how things feel-- words like sticky, coarse, curved, heavy, hairy, angular, velvety, dense, light-- you might find that they sort well into three categories. We call these:

texture

weight

size and shape

To illustrate this approach, this chapter focuses on the two categories of texture and size and shape. You will get to run through three times the steps of having a touch experience:

A. Developing a wordlist

B. Developing a checklist of objectives

C. Studying the objectives for ways to make them more or less difficult.

Don't worry if these steps don't make sense now; they probably will after you have been through them three times.

The last two parts of the chapter deal with (1) developing and using information about the child's sense of touch; and (2) developing and using more touch-focused learning experiences for the children you work with.

## Texture: Oobleck-A touching experience

This chapter starts messily and sociably. You need to work either in or near the sink area of your classroom or in your kitchen at home. Don't work alone! It's not dangerous but it's about three times as much fun with one other person, and fifty times as much fun with two or more. Try it with your co-workers, or with your family, or at a party. Oobleck is amusing, challenging, and quite different.

Here is what you need:

a box of cornstarch

at least one large container (about the size of a shallow dish pan)

newspaper to spread around to make clean-up easier (but don't worry if oobleck gets on things; it comes off easily with water)

a small container for pouring water

food coloring to make colored oobleck (optional)

Now,to make some oobleck, dump about half the box of cornstarch into the large container. With the small container, slowly add water, mixing with your hands all the time. By the way, isn't the texture of dry cornstarch interesting? Continue slowly adding water and mixing until you get something that is thick and smooth and feels very strange to touch. This is oobleck! Did you add too much water and get something thin and soupy? Well, dump in more cornstarch until you get oobleck back. If you like, add some food coloring.

Now that you have oobleck, play with it. The main idea here is just to enjoy the feelings and the process of discovery of all the strange things that oobleck can do. Don't give up too soon. Can you sculpt with oobleck?

Break it? Pour it? Poke it? Dry it? Paint with it? Dilute it? Thicken it?

When you get all ooblecked out, take some time with your friends to make two lists. We need the first list for the next activity, and you will need the second list when you do oobleck with children. The first list should show what you felt while working with oobleck, both with your skin and in your head. The second list should include ideas and feelings that you all discovered about oobleck, such as "You can't sculpt with oobleck." (Or can you?) You may find you get into some interesting arguments about these discoveries. Duplicate the list of feeling and touch words here.

## A. Developing a Texture Wordlist

Playing with oobleck gets you involved with the textures of an unusual substance. Here is a list of words describing textures that might come from working with many different substances. Add your oobleck texture words to the list if they are not already present.

| | Your words |
|---|---|
| soft | |
| hard | |
| slippery | |
| smooth | |
| wet | |
| gooey | |
| sticky | |
| coarse | |
| fine | |
| rough | |
| bumpy | |
| sharp | |
| crumbly | |
| solid | |
| silky | |
| dry | |
| grainy | |
| cracked | |
| wrinkly | |
| powdery | |
| hairy | |
| lined | |
| jagged | |
| metallic | |
| resillient | |
| oily | |
| dull | |
| velvety | |

Your words

tacky
oozing
mucky
squishy
prickly
plump
feathery
gauzy
slick
clinging
fuzzy
spongy
leathery
woolly

Generating a wordlist like the one above, besides being fun, is a good way to get started thinking about a set of learning experiences. It can help you focus. It is not a vocabulary list to teach to children, although many of these words will occur in your work with them.

You need to do some work with the texture wordlist to get the words into your active vocabulary. They are inside us because we thought them up; now you need to get them inside you. (In later chapters, you will be the one to do the work of generating word-lists.) Think of some way to sort the words in the wordlist into two or more groups. Then sort them, using the space below. You may not have a title for your groups at first, but you should have names for them by the end. If you get absolutely stuck and have no ways to group them, here are two ideas: (1) textures that can apply to liquids, and textures that cannot apply to liquids; (2) smooth textures, rough textures, and textures that are neither rough nor smooth.

## B. Developing a Checklist of Objectives for Texture

Now you've had a learning experience with textures, and you've explored some texture words. What's next? Well, it's time to start thinking about children. How good are they already at perceiving and describing textures and what additional skills do you want them to develop?

We attack this problem by constructing another list, this time a list of objectives. We use objectives because they force us to be very clear as to what we are talking about. Also, such objectives readily suggest both some ways that we can use to learn about children and new learning experiences for them. You will see as we go along what we mean by these statements.

The wordlist suggests that there are actually many different textures. So children should be able to discriminate among them. The wordlist also

suggests that there are various degrees of difference between these degrees (that is to order them). They should be able to use some texture words both by sorting objects into labeled piles of textures and by using the words to describe objects. We want them to identify objects with different textures, and we want them to be able to form their own classification system for objects based on textures. These skills all can be appropriate to preschool through first-grade children. The list below restates these skills very carefully. Read each objective, trying to imagine how you would check either yourself or child for the described skill.

Texture Objectives

The child should be able to:

DISCRIMINATE
1. Given a bag full of textured materials and an identical set on the table in front of him, feel one of the objects on the table and find by touch alone the matching material in the bag.

ORDER
2. Given one piece each of metal, wood, rubber, felt, and cotton, place them in a line in order from hardest to softest.

ORDER
3. Given four squares of different grades of texture coarseness (e.g., weaving or sandpaper), place them in order from coarsest to finest using touch.

SORT
4. Given an assortment of materials with different textures and a pair of labels (examples: rough and smooth; slippery and not slippery; wet and dry, fluffy and not fluffy, hard and soft) sort the material into two piles, one for each label.

DESCRIBE
5. Given an object or material, use at least two texture words, in one or more language, when asked to tell how it feels.

IDENTIFY
6. When given a texture word like hard, smooth, coarse, wet, etc., (again in one or more languages) be able to pick out in the room some object that has that texture.

CLASSIFY
7. Given a set of materials with different textures, be able to sort them into two or more piles according to how they feel and to give a name to each pile, using one or more languages.

In the Oobleck activity, only one of these objectives was of prime importance. Which one was it?

Which of the texture objectives does not ask the child to use any texture words (except those he or she may think up alone)? In the rest of the objective, is there any way to tell whether a difficulty is related to understanding words or perceiving textures?

Making objectives in the Checklist more or less difficult

Look again at the first of the texture objectives on the previous page, the one about matching textures in a bag with ones on a table. (By the way, all the textured materials should be the same size and shape. Otherwise how do you know if the child is using the texture or some other clues to pick out the right object? One way is to make "texture plates," of small squares of equal size, using cloth, foil, paper, wood, etc. glued to heavy cardboard for backing.) One question that will occur to you as you think about applying this objective in the classroom, "Is this skill too hard (or too easy) for the children I work with?" How do you tell? Actually you can't tell yet! It depends on the materials used.

Consider three different sets of materials found in three different bags. In which bag do you think it would be hardest to discriminate the materials? In which the easiest? (Write your answer next to the bag.)

Bag A

cotton cloth
sandpaper
wood
cardboard

Bag B

bond paper
onion-skin paper
water-color paper
paper from different cultures, i.e., origami paper, etc.

Bag C

cotton cloth
quilted cloth
silk
wool

Did you decide? Because next we're going to tell you what we think...

Do you agree that Bag A is the easiest? All the textures there are quite different from one another. Bag C is next, with all four textures being somewhat similar (all "cloth"). Bag B is the hardest, because the textures of different kinds of papers are more similar than the different cloths and are very difficult to distinguish from one another.

But what can you do about applying this objective to your classroom?

We think you should start with easy materials, Bag A for example. Then, if you find all the children able to handle it (certainly useful information), make the materials a little more difficult, say Bag C. If you're not so much trying to diagnose children, but trying to challenge a particularly interested child, let him or her work on becoming able to distinguish different kinds of paper by touch.

Anyway, the point is that most of the objectives we'll be working with are not easy or difficult in themselves, but depend in some way on the exact materials and the exact way you, the children, and the materials interact.

Let's try another objective, the sorting objective (4). How can we make this objective more or less difficult? The difficulty of that objective seems to depend on two points: the particular materials that are to be sorted and the labels that are to be placed on the piles. Because we have already considered one example where materials were important, we shall consider only the labels this time.

First suppose that the materials are: a piece of wood, a small piece of solid metal, a piece of paper, some cloth, a drinking glass, and a piece of plastic. Assuming that you use language which is familiar to the child, which do you think will be more difficult to sort these materials into:

one pile for slippery and the other for not slippery

or

one pile for hard and the other for soft objects?

We think that slippery and not slippery will be a more difficult sorting task than hard and soft. Do you agree?

Think of some materials that would be very easy to sort into slippery and not slippery, but difficult to sort into hard and soft.

Write your list of materials here.

We've got more work for you to do. Look at objective 2 which has to do with ordering some materials from hard to soft. It tells you what the materials are. But of course you are free to change them to make the objective more or less difficult.

What are some materials that would make the task more difficult?

What are some materials that would make the task less difficult?

You can change the words, too. You don't have to use a range from hard to soft. What are some words that would make the task more difficult?

Words to make the objective less difficult?

Finally, carry through this same kind of analysis for at least two of the remaining four objectives: 3, 5, 6, and 7. That is, tell ways to make the objective easy or difficult.

Size and Shape: "It's in the bag";
an experience with size and shape

You can either do this activity as a solitaire game or make up rules for playing with someone else.

You need a set of fairly small wooden or plastic blocks of various shapes and sizes. Attribute blocks, pattern blocks, or geoblocks from the Elementary Science Study series will work well. You also need two bags. And some Cuisenaire rods, if you have them. If not, you will need some straws.

Here are three simple activities to try:

1. Find two of each size and shape of block (color doesn't count) and put away the rest of the blocks. Put one of each block in the bag, leaving the others on the table. Pick up one of the blocks on the table and find its mate in the bag. Place them in a pair on the table. Now draw out another block. And so on, until all the blocks are out of the bag. For bilingual programs, how would you adopt this procedure?

2. This is similar, except now put one of each type of block into separate bags. Put one hand in each bag and keep drawing out pairs until you have taken out all the blocks. Was this easier or harder?

3. Do you have Cuisenaire rods? If not, cut up about 20 straws into about ten different lengths. Whatever you are using, dump them in the bag. Now try to draw out the rods or straws in order of increasing length. If available, use materials such as bamboo, wheat straw, grass stalks used for weaving, etc.

Notice that none of these activities involved using shape and size words. Make a list of such words and modify at least one of the activities so that some of these words will be used. Add to this list, the same words from the language(s) used by the children in your class.

Can you choose one of these activities and turn it into a simple game for two children?

Wordlist for Size and Shape

Here is a list of words for size and shape that we found. Add you words to ours.

flat
angular
curved
rounded
thick
circular
short
small
thin
long
square
pointed
triangualr
full of holes
spherical
tiny
indented
protruding
cylindrical
boxlike
large

In the space below, form some pairs of opposites of shape words like thick-thin.

One use of a wordlist is to suggest materials to use with children. Let's try this with our size and shape wordlist. Look at the words on the list and let objects come to mind that have these qualities. Here is what happened when we tried this:

buttons
jars of various sizes and shapes
different-sized and shaped boxes
sticks
pencils and crayons of different lengths
kindergarten blocks
construction toys
paper cutouts
marbles and beads
clay objects
snack materials, i.e., crackers

We left space for you to add your own:

## A Checklist of Objectives for Size and Shape

By now you should be getting the idea that in making a checklist of objectives, we consider the various behavior words (so far we have used: discriminate, compare, order, sort, describe, and classify) and see if they apply to the particular use of the sense we are considering. For size and shape we found we wanted to use the bahaviors of identifying, sorting, and ordering (used previously) and two new behavior words, naming and tracing.

The child should be able to:

IDENTIFY
11. Given various shapes and sizes of blocks both in a bag and on a table, reach in the bag and pull out a matching block for each block on the table.

NAME
12. Given a bag full of blocks shpaed like triangles, circles, squares, rectangles, and rhombuses (diamonds) name each block before pulling it out of the bag. In bilingual programs, either or both languages may be used.

TRACE
13. Given a drawing of shape, trace around the outside of it with a finger or crayon. Perhaps the actual block may be matched to the drawing.

ORDER
14. Given a bag of blocks all the same shape but of different sizes, pull the blocks out of the bag in order from largest to smallest. Repeat, reversing the order.

SORT
15. Given a bag of blocks and some labels of different shapes in one or more familiar languages, pull out of the bag all the blocks that belong with each label, e.g., "circles".

There is another objective that is needed for describing sizes and shapes. You should add it.

DESCRIBE
16. Several times we have asked you to pick out objectives that don't ask the child to use words. We think it is important to recognize those cognitive skills that are nonverbal. Why? For two reasons. The first is that there are worthwhile nonverbal activities to do with children that are too often forgotten because we live in such a word-oriented world. The second is that some kinds of learning problems can be separated from verbal learning problems Consider two children, neither of whom can reach in a bag and pull out a triangle when you ask him or her to do so. But the first child can pull out a triangle when you put another triangle in his other hand, whereas the second child can't do that. Maybe the first child simply hasn't yet met the word "triangle." The second child has a different problem.

For now, once again pick out the objectives that don't use words. However, even these often require the child to understand the words used to give him or her direction. This means that for the bilingual child, the adult must adopt these direction, either by gesturing or using the child's language.

## Making Objectives for Size and Shape More or Less Difficult

We hope you understand how to do this task now. In later chapters, we are going to use a more compact form for noting how to make objectives more or less difficult. But for now, work it out as follows:

| objective number | ways to make the objective easier | ways to make the objective harder |
|---|---|---|
| 11. | | |
| 12. | | |
| 13. | | |
| 14. | | |
| 15. | | |
| 16. | | |

"Diagnostics" for Touch

It's been a lot of work to get this far in this chapter. We have been dealing in considerable detail with touch perception and we still haven't begun to talk about what you do with children. But now the payoff begins. In this section we'll talk about how you can find out to what degree certain children have already developed their skills, knowledge, and interests about multicultural materials. In the next, we'll develop more activities relating to touch that you can do with children. And in the final section we'll suggest some directions to go on from there. The payoff will continue in succeeding chapters as you find yourselves progressing more smoothly and clearly as a result of having done this earlier work.

What do we mean by a "diagnostic"? First, here's what we don't mean. We don't mean a "test used to place children in a rank or give them a grade." Nor do we mean a technique for "finding out what is wrong with a child." We see a "diagnostic" as a technique to:: (1) find out to what extent a child is involved in a particular area of learning; or (2) determine the method the child is using to function in a learning area. That is two purposes--level of involvement and method of functioning.

Here are examples. You need to know that Sarah and Sam spend a lot of time working with texture plates and that Sam really seems to be involved in some exciting learning with them. Walter, on the other hand, never goes near the texture plates, although he does use touch words a lot. This is a brief description of the level of involvement of three children with sense perception materials. To go beyond this information to determine the method of functioning, you become concerned with other questions: Has Sarah gotten stuck?' if so, where?; what can you lead her to next with the touch materials? Is Sam ready for some classification games? Has Walter already mastered all the skills in the touch area, or does he not go there because he first needs some preliminary work with someone? What is the significance of his using lots of texture words?

So much for purposes. How do you do diagnosis? We see two modes: observing and probing. Briefly, in observing you decide you will pay attention to certain kinds of things with your children and you take notes, perhaps by carrying around with you notecards for each child. In this mode the checklist of objectives serves to help you decide on what you will focus your observing so you become "ready to see" both the level of involvement of your children and how they are functioning. You may also note whether their interest differs with materials which belong or do not belong to their own culture.

By probing, we mean taking a child aside for some time and simply asking him or her a few questions, or perhaps spending 15 minutes working on some materials with him or her.

What are you going to do with the information you gather in this diagnostic process? If it doesn't help you work with your children, there is no point in taking up precious time and energy doing it. But for most teachers, diagnostic techniques serve a real function. One way to look at this function is to see that the technique can provide answers to questions about what to do with materials and what to do with individual children. Here we have

started these lists of questions, using sense perception as the example. You should add some questions to each list.

QUESTIONS ABOUT MATERIALS

In beginning work with sense perception, what should I first introduce to the children?

Are the materials I have introduced being used? If not, why not and what do I do about it?

Are these materials worth using again next year, or should I find new ones?

QUESTIONS ABOUT INDIVIDUAL CHILDREN

Where does this child like to spend time and what happens there? How can I enrich this time or use it for teaching difficult skills?

Are there areas that the child avoids because there's no way to get started? How can I help him/her get started?

Is this child learning the skills I had planned? If not, why not? And what should I do to help?

---

This has been a lengthy introduction to what we mean by diagnostic techniques. Now we can talk about how to make up and use diagnostics for perception of touch. To do this, we use the checklist of objectives for touch. That's one of its functions.

Let's first think about the observation mode. Look through the checklists of objectives again. You see several kinds of skills there--matching, naming, identifying, sorting, etc. The simplest diagnostic technique is just to take note of occurrences of these behaviors as follows:

(1) Observe a teacher role-playing a 4-year old touching different objects. Record what you see.

(2) Compare your record with records of other observers. Discuss.

(3) Observe children in your own class.

You have to really "tune in" to your children and their involvement with touch. Watch their hands when they are working. See the way they touch each other. Form an impression in your mind of each child. Is this someone who really loves to touch, or is this child afraid of touching things and people? Keep notes for a few days to go over in your training session.

From your notes, pick out three children who love to touch things and describe what you mean by that and how you know it. What do they touch? What do they say about touch?

To do diagnostics in the probing mode, we need to pick particular objectives to work with. Let's start with objective 5. Here it is again:

DESCRIBE
5. Given an object, use at least two texture words when asked to tell how the object feels.

So this objective is about using texture words. What do you do to find out how your children use texture words? You could have them tell stories about how objects feel, or form a ring where each person has an object and then go around the room using touch words. But the simplest way is just to ask individual children how things feel as you are working with them during the day and keep some kind of record on notecards. If you want to know something about individual children, you keep individual records; otherwise you can just keep a general record of class vocabulary for touch. Note that your children will soon get the idea that you are interested in their touching things and what they can say about that type of behavior.

List words that children in your class use to describe how things feel. Also include other interesting observations about their use of touch. In bilingual classrooms, you may need to ask a parent or bilingual aide for help in recording the child's responses.

Now we'll try to make a diagnostic for objective 12.

NAME
12. Given a bag full of blocks shaped like triangles, circles, squares, rectangles, and rhombuses (diamonds), name each block before pulling it out of the bag.

There's a natural for this one. Tell two children that you are going to teach them a game. Give them each a bag of blocks and have them sit opposite each other. Tell them to take turns reaching inside their bags and naming a shape of a block before pulling it out. If they can't do it at all and they use the same language, then they may need some learning experience with the names of shapes. Otherwise, they can play for awhile. You can come back later to see if they know all the names.

Do this game with at least three pairs of children. Write what you found out here. Note that some children may be able to use more than one language.

Creating Learning Experiences for Touch Perception

All the work we've done up to now (the wordlists, checklists, and diagnostics) is supposed to help in creating meaningful learning experiences for children. But the way that this happens varies from teacher to teacher. We will show you how it works for us (a model again) in the hope that these ideas will help you. In following chapters we will ask you to do this work and will generate some criteria you can use to tell whether you have done a good job or not.

WORDLISTS suggest materials and organization. We get the idea that everything in the classroom and outside it is usable material for touch activities. But some materials are more useful: blocks, texture plates, cloths, sandpaper, clay. From the first sorting of touch words we got the idea that there were really three aspects of touch to be concerned with: texture, weight, and size and shape. So we don't want to neglect any of these areas.

CHECKLISTS of objectives give us lots of ideas and focus on certain skills like identifying textures, naming shapes, and comparing weights. The objectives are not the learning experiences, but they strongly suggest them. The learning experiences themselves need to be more general, growing more from what is happening in the room and being more fun, than what the objectives alone suggest.

DIAGNOSTICS give you ideas about where to start. Some ideas for beginning come from noticing what children like to do--their involvement. Others come from discovering areas that need work with some children, or finding the skills that all of them already have and deciding what's next.

## Sandpaper Experiences

Here we describe one set of learning activities in considerable detail. We hope that you will try them, or some suitable modification of them, with your children.

These activities are suggested by the words "coarse" and "fine" on the textures wordlist. Objective 3 on ordering relates directly, whereas objectives 1 and 4 relate less directly. We would try these activities with children who we knew liked to work with sorting real objects and who we knew needed work with using the words "coarse" and "fine" and with developing finer touch discrimination.

### Materials

Several sheets of sandpaper of four grades, ranging from very coarse to very fine; cut them into quarters

Four shallow boxes for sorting the sandpaper labels

Bags (cloth is best, but of course paper works)

Glue a piece of sandpaper of each grade onto the back of each of the four shallow boxes. Label the box on the outside with words corresponding to the grade of sandpaper--very coarse, coarse, fine, very fine.

1. Put out one or two pieces of each grade with a sign saying, "FEEL ME." Leave for several days, occasionally talking with children about the textures of the paper and introducing the words coarse and fine.

2. Show children the four sorting trays with the sandpaper pieces glued on the back. Bring out a bag with all the rest of the sandpaper pieces in it and ask children to sort the paper into the boxes. Don't require just reaching into the bag or working with eyes closed yet.

3. Try a sorting race with two children, each having half the sandpaper. They place their pieces next to the appropriate box as fast as they can. Then they check each other to see if they were right.

4. Ask children to sort the sandpaper with their eyes closed (or use blindfolds if they are used to them).

5. Ask children to sort by reaching into the bag and calling out the name of the grade of sandpaper they are going to pull out. They work as partners, each taking a turn until they either make a mistake or finish the bag.

6. They try pulling out all the very fine pieces, then all the fine pieces, then all the coarse pieces, finally all the very coarse pieces. They can practice this task by themselves.

7. Try more grades of sandpaper (from a hardware store). As children use sandpaper for sanding, have them order the used sandpaper along with the unused pieces in terms of coarseness. Encourage them to speculate about what is going on. Let them look at sandpaper or the surface of wood that has just been sanded, with magnifying lenses. Encourage them to sand scrapwood and feel how the texture of the wood changes. Are they curious about the numbers and words that appear on the back of some sandpapers? Can they bring other kinds of smoothing papers like garnet papers and emery cloth and wet/dry papers from their home woodshops? This group of questions and activities is to point out that, of course, you want to extend the work or allow it to take off into areas that interest the children.

On the next page, describe the parts of this activity that you tried in your class. How did your children react? Did you do any diagnostic work? Tell interesting anecdotes. Raise questions that came to you as a result of trying these activities. Describe where you would like to go next with touch activites.

WHAT HAPPENED IN MY CLASSROOM WITH SANDPAPER EXPERIENCES

## More Touch Learning Experiences

There isn't space in this learner's guide to provide a "complete" set of exercises for teaching touch perception (let alone the other senses). Besides, you are learning how to provide them for yourself. But in this chapter we will give you some more ideas. One note before the list--often some of the most effective teaching about something like sense perception will come while you and your children's focus is on something else. For example, you and some children are sifting flour; all of a sudden you all start feeling how the flour becomes more powdery, you feel the insides of the sifter, you feel different kinds of flours, etc. You can hardly plan this kind of learning. But you can be ready for it to happen. We think the kind of work you are doing here will make you more ready.

Anyway, here is a random list of activities, waiting for you to develop and expand them.

1. Textures of liquids are really interesting. Have some jars of different ones around for just feeling, or sorting, or naming. Water and soapy water would be a minimum. But what about glycerin, rubbing alcohol, oobleck, molasses....? It all depends on how careful your children are. Anyway, be prepared for mixing, pouring, spills....

2. Introduce your children to the double-pan balance. Show them how you use it to check your guesses about which of the two items is heavier. They may have other interesting ideas about how to use it, but eventually they will probably get around to comparing weights. With lots of interesting objects around for weighing like clay, toys, blocks, chopsticks, gourds, and so on, they are sure to improve at sensing weight through touch, too. They could use both their sense of touch and the balance for sorting and ordering by weight.

3. Get children started with tracing the outlines of real objects and cutting them out. Include objects that have simple geometric shapes as well as more complex ones like hands, utensils, pencils, boxes, checkers, etc.

4. Go around with several children and put up signs in appropriate language(s) on objects in the classroom that say, "This feels..." Include items like the chalkboard, animals, bulletin boards, a person's clothes, metal sinks, or whatever strikes the children's fancy. Let them come up with a lot of the words, too.

5. Make a feely collage by pasting cloths and other textural materials onto a large piece of paper. You can include words for what you feel. Perhaps turn the words into a texture poem.

6. Begin feeling objects with other parts of your body besides your hands. Can you feel shapes with your feet, for example? Or compare textures with your arms?

7. San Francisco's Exploratorium has a tactile dome that is really a sensual experience, a labyrinth, (totally dark), made of wonderfully textured materials. It's probably too scary for a class of very young children, but you might consider building a miniature environment like it in your classroom. Choose at least one of these ideas (or one of your own) and elaborate it into a set of activities for your classroom. Then try it out. On this page explain below what you planned, list the objectives you had in mind, and chronicle what actually happened.

USING TOUCH - WHAT I PLANNED AND WHAT HAPPENED

## Beyond Touch

We need to say a few words about how this work fits into a broader scheme. Recall the discussion in Chapter II about why we teach sense perception, about how important our senses are to learning. Our sense of touch is quite important. And it should be clear that you, as a teacher of young children, can do something to help children to use their sense of touch better and to value how things feel. But beyond that, you can see that you are also training mind skills as you work with children on touch activities. Classifying objects according to their textures helps children improve at classifying in other ways. And our world is full of classifications that we must make and use.

Then there are higher-order skills that depend on accurate sense perception, like the child's inference that the flour gets "more powdery" because the sifter puts air in it. Usually we don't talk about "teaching" inference, prediction, measurement, hypothesis making, and experimentation before grades two or three. But you know they are going on all the time in some informal way with younger children. And working with materials like those we have talked about for touch will increase the opportunities for children to try out these other skills. You can do a lot to encourage them, just by letting your enjoyment come out and by indulging yourself in some speculation about the powderiness of the flour or why sandpaper looks the way it does under a hand lens. We hope that the activities listed in the previous section gave you the idea that teaching sense perception isn't dull or narrowly limited to what is in those objectives, but rather offers an exciting chance to try new kinds of activities with children, or a new way to use art work or sand-table work.

## Check-up

Now it is time for you to check youself to see if you have met the objectives we set for you at the beginning. Read through the Objectives for the Learner. You may feel that this chapter covered a great deal that isn't listed in those objectives. Right. But we don't expect you to have mastered everything yet. That will come in the following chapters.

Mostly you can check yourself simply by asking yourself honestly whether you think you can do the things listed in the objectives. But to make this learning more concrete, and to provide some basis for discussion in your training group, here are four self-diagnostics: (one for each objective)

1. Write a description about the way this guide feels to the touch. Now list the skills you had to use to write the description. Limit the skills to sense perception skills.

2. Choose one of the texture objectives that you didn't use before and list at least two ways to make it harder and two ways to make it easier.

3. Here is a diagnostic technique for finding out whether children can

tell a coarse piece of sandpaper from a fine piece. Have two such pieces; then take a child aside, ask the child to close his or her eyes, and hold out his or her hands. Ask the child to say which hand has the coarse piece of sandpaper. Do this diagnostic with two children in your classroom. Report your results.

4. Choose one of the learning experiences that you haven't yet tried with your children. It could even be one of the ones that you have tried yourself, like oobleck. Try it with your children. Report on what happened.

Review Report

# CHAPTER IV. TASTE AND SMELL

## General Plan

You can probably predict much of the content of this chapter. From the title, you can tell it's about the senses of taste and smell. We grouped these two together partly because the separate use of them in our urban western culture is somewhat limited. If we lived in an agricultural or hunting community, either sense alone might be much more important. Another point about this chapter is that in it you will work on the use of a multi-modal approach (use of many senses ) in developing a curriculum for sense perception.

## Tasting and Smelling: An Extravaganza

The starting place for this chapter is quite obvious. It's almost impossible to start working with the taste and smell senses in a multicultural classroom without food, and certainly it would leave out a lot of fun. So here it is. Get together with other people in your training group or your co-workers and go through the following activities. Note that these activities, in contrast to earlier chapters do not focus primarily on cognitive perception skills such as the teaching of taste labels (salty, sweet, sour, bitter) or discrimination ("find all the things that are salty"). Rather, the intent in this chapter is to provide experiences to children which will expand their taste and smell repertoires by using the richness of different food materials and cuisines.

Because food and taste are such an integral part of each culture, there is a special sensitivity related to how the adult in the classroom reacts to the particular foods familiar to children in the classroom. When the teacher comes from a different cultural food perspective, it is important that he/she be aware of these differences so that the experiences in the classroom will be positive for the children.

One way to develop this awareness is to go through some experiences in which you can be "exposed" to different foods, personally react on a verbal and emotional level, compare reactions with other adults, reexamine your own perceptions, and plan on how to use what you have learned with the children in your classroom. The following activities are designed to provide such experiences.

I. INTRODUCING MULTICULTURAL FOOD MATERIALS

## A Multimodal Activity Using Many Senses

1. Work in small groups

2. Have a leader prepare a set of brown bags with fruit or vegatables that are "uncommon" in the sense that they may be familiar only to a particular racial or cultural group. Number the bags.

3. Also prepare some plates with peeled pieces of the same foods; number the plates, using numbers which are different from the bags containing the same material.

4. For each bag, the learner is asked to do the following:

   A. Close your eyes, open up the bag and smell the contents.

      Close the bag and answer the following: Responses

      (1) What do you think is in the bag? _____

      (2) What kind of smell does it have? _____

      (3) How do you feel about the smell? _____

      (4) Do you like it? _____

      (5) How do you think it can be used? _____

   B. Now stick your hand in the bag and feel the contents without looking at what is in the bag.

      (1) What do you think it is? _____

      (2) Describe how it feels. _____

      (3) How do you feel about it? _____

      (4) Do you like how it feels? _____

      (5) Can you think of something that feels the same (or similar)? _____

   C. Compare and discuss your findings with other members.

      (a) How are your answers the same or different from the other learners?

      (b) In item 2, how many people used adjectives (i.e., sweet, rough, fruity) and how many people used descriptions such as "it smells like a _____ (name of specific object)."

      (c) Are the responses affected by how familiar the object is to the observer? In what way?

5. For each plate of sample pieces of the above, the learner is asked to to the following:

   A. Look at each plate and select one piece. Responses

      (1) What do you think it is? _____

      (2) How would you describe what it looks like to someone else? _____

      (3) Write down the number of the bag which you think holds the same material _____

   B. Taste the sample piece and answer the following:

      (1) How does it taste? _____

      (2) How do you feel about it? _____

      (3) Do you like it? _____

      (4) Have you ever tasted it before? _____

      (5) How do you think it can be used? _____

   C. Compare and discuss your findings. What have you learned from this experience? Did you find any differences between your likes and dislikes depending on the modality used? (e.g., you liked the taste but you hated the feel of a particular material?)

6. Reflection Notes

Looking over the previous two activities, you have probably noted that taste words are somehow different from the words we've encountered for touch. You may notice that there are many very distinct tastes--for example, pineapple ice cream is a different flavor from blueberry, and artificial strawberry is very clearly not real strawberry. But it would be very hard to describe in words just how those flavors differ. It seems as though there may be so many distinctly different flavors that our language just doesn't bother to make up categories or groups for them. We do use one major classification system: sweet, sour, bitter, salty: but beyond that, the tastes are all so individual that we simply identify the taste by using the name of the thing that tastes that way. Pork chops are pork-chop flavored, ice cream has lots of different flavors (and names) depending upon what it's made with, green peas taste like green peas (although all green vegetables have a vaguely similar taste that might be called "vegetabley"). Smell is not quite such a problem, but words still don't convey everything we experience. An important point to remember then, in developing children's taste and smell skills, is that there is a lot more than words can describe. That suggests that naming tastes may have to correspond sometimes to naming the thing that has the taste, and also that discriminating taste may have to be largely nonverbal. What implications does this have for children from different cultures?

## 7. Word List

The list that follows is our list of taste and smell words. There are two kinds of words on this list, though. First come words that directly describe qualities of taste or smell (just as touch words described qualities of touch). But the second part of the list includes names of things that have a distinctive taste or smell.

### List of Taste and Smell Words

Part I-Words That Describe Taste and Smell:

**Smell**

perfumed musty fragrant fresh delicious pungent savory sweaty wet noxious sweet-odorous scented sterile fetid putrid rancid spoiled rank stinky stale smoky smelly oily fruity moldy leathery

**Taste**

acid sour sweet bitter salty bland acerbic spicy tangy stale weak strong full-bodied savory flat mild dainty juicy dry exquisite luscious gamey delectable flavorful tasteless toothsome appetizing palatable insipid gustable wishy-washy zesty licorice austere nasty after-taste milk and water lip-smacking tickle the palate relish ambrosiac flatter the palate turn the stomach nectar

Part II-Foods and Spices That Are Particular Tastes and Smell:

white potatoes sweet potatoes yams - summer squash winter squash strawbery blueberry cranberry huckleberry persimmon grapes apples oranges tangerines tangelos lemons limes bread fruits grains vegetables dairy products roast beef steak short ribs sweet-and-sour pork onions garlic peppers chutney cloves nutmeg cardamom thyme cinnamon basil rosemary marjoram

A. Add your own words from the Taste and Smell Extravaganza. Can you separate them into the two categories we used? If not, add a third one of your own.

B. Add words from different languages that your children use to describe these same foods.

8. Working with Children

Now plan a similar experience for children. Use the "notes" column to indicate reasons for choosing particular material.

| Material to be used | Types of experiences | Notes |
|---|---|---|
| | | |

7. Observe 4 -5 children going through the "Bag and Plate" experience. Record what you see.

| Names of Children | Experience | Observations |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |

II. USING COMBINATIONS OF MULTICULTURAL FOOD MATERIALS (COOKING EXPERIENCES):

In this section, you are asked to extend the experiences with specific food items into their use in cooking different types of cuisine. This extension requires you to consider the following questions:

A. How would you decide which dishes and cuisine should be used?

1. Reasons for using particular food experience.

a. Relationship to children in classroom?

b. Relationship to other aspects of classroom programs?

2. Resources to be used:

a. Information resources: (see sample receipes in Appendix)

b. People resources:

B. What kinds of experiences will you provide?

| Prior to Preparation | During Preparation | After Preparation |
|---|---|---|

C. Compare your plans with other learners. In what ways are they different? In what ways would you revise or extend your plans?

D. Conduct your cooking session and record your observations on 4-5 children.

Name of Dish: _____ People Resources: _____

| Children | Reactions | | |
|---|---|---|---|
| | Prior to Cooking | During Cooking | During Tasting |
| 1 _____ | | | |
| 2 _____ | | | |
| 3 _____ | | | |
| 4 _____ | | | |

# V

## CHAPTER V. HEARING

### Objectives for the Learner

After working through this chapter, you should be able to:

1. Given a wordlist relating to a particular sense area, use the specific criteria given in this chapter to evaluate the wordlist.

2. Generate a wordlist for a given sense area that meets the wordlist criteria given in this chapter.

3. Given a sense area, generate a checklist of objectives for that sense area using a wordlist and skill words.

4. Evaluate a given checklist and revise it to meet criteria which you have developed.

Before we begin, take two minutes. Close your eyes and pay attention to the sounds you hear, making a mental list of them.

Write as much of your list as you can remember here.

What did these sounds convey to you? Were there sounds of language? Emotions in the sound? Patterns? Moods? Music? Was there silence? Could you hear your own body's sounds? Obviously we don't need to tell you the importance of the sense of hearing.

More than in previous chapters, the ideas for including hearing as a sense in your teaching are going to come from you. And from your training group. So you won't find this chapter as it stands now a guide for teaching sound perception. But, after you have worked through it, and if you and your colleagues and the instructor pool your ideas and write them down, you will have a manual, a unique one, developed by you.

The help that we will provide comes again from the model for curriculum development we have been using all along. We need to stress again that this model (wordlists, checklists, diagnostics, and learning experiences) is not the only one; rather, it is one we find works best for us. And so we continue to ask you to adopt it provisionally for the work here. Perhaps you are becoming more aware of your own model or method as you discover the limitations of ours. If so, that pleases us, for we believe that in becoming more conscious of the processes used in life and work, people can make them better suited to what they want.

Now let's get started.

**Sound Scavenger Hunt: An experience using Hearing**

This activity works best with two pairs (at least) of people, but if you can't assemble that many people, work with one other person. You need to be in an environment fairly rich in sound-producing materials--like a classroom, a kitchen, or outdoors. You may wish to have a cassette tape recorder.

What to do: You and your partner are to collect the sounds on the list below and bring them back to share with the rest of the group (or to go over again by yourselves if you are alone). You may do this by bringing back the materials to make the sound, or a recording of the sound, or a description of the sound, or some combination of these:

the sound of something moving
a very loud sound
an angry sound
a pleasing sound
a musical sound
the sound of silence
a sound that changes
a body sound
sounds in two other categories that you create

As you share your sounds or go over them, think of ways to describe and compare them. You can include words that describe sounds--whistling, booming, dissonant. Or words that are sounds--ugh, sssssss, quack. Or kinds of sounds--a cry, a tap, a wail, a sigh. Or categories of sounds--percussive sounds (there are so many kinds of these!), noise, melodic sounds, quiet sounds. Or words that describe the tempo and change of the sounds--quick, undulating, pulsing. Really get into it; there's a lot more here than you might think at first.

**Wordlist for Sound and Hearing: Criteria for Completeness**

This is really a continuation of the work you started in the sound scavenger-hunt activity. But now expand your field of word hunting to any sounds you can think of. Let your inner ear range far and wide--music sounds and words, words that describe the sounds of instruments, the tempo and mood of music, the sounds of storms and rivers and other nature sources, words that bring to mind the sounds of the city or of the country, words that describe sounds people make, words to describe the changes in sound, words that describe the absence of sound.

Make a list of records of music from different cultures that you think are useful for expanding sets of materials for developing sound and hearing in the classroom:

| | Record | Notes on Use in Classroom |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |
| 6. | | |

Now we need to talk about ways to know when you have done enough wordlist generating. Why are we making this list anyway? It is to suggest the range of possible experiences and skills that relate to our subject area (sound and hearing in this case). So you have done enough when you have covered all the dimensions of sound and suggested the range of these dimensions. Let's formalize this into two criterion statements.

Criteria for completeness of a wordlist

1. Are all the categories of words in the subject area represented?

2. Is there a wide range of words in each category?

We don't mean to make too much of this issue; you have probably been applying these criteria implicitly all along. But let's see how to check your list of sound and hearing words. You will know if the wordlist is useful if it makes you think of more words.

Categories are names for groups of words. For example, "loudness words" is a label for a category. We should be able to think of words that belong in each category. The words loud, soft, strident, peaceful, quiet, roaring, and tiny all suggest some kind of loudness (or softness) and so belong in this category. Of course, that isn't to say that they won't belong in some other categories, too. The word "roaring" could belong to animal sounds and storm sounds, too.

In the chart below, list categories for your sound words and include some examples for each category you decide on.

| category | word examples |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

How do you know when you have exhausted the possible categories? Don't worry about it. You can't exhaust them; there are always more. We have made quite a hobby of collecting sound words; and the further we get into it, the farther we can see that we have to go. But you expand your own list by going to other sources: the backs of record jackets, sound poetry, a thesaurus, your friends, and the children in your class.

Now look at all the words you have that fit into each category. For example, suppose one of your categories is "pitch words." Well, pitch ranges from high to low. Do you have words that suggest this full range? Suppose you found you had:

| | |
|---|---|
| shrill | sharp |
| high | flat |
| mellow | tinkling |

What's missing?

It needs more words for low-pitched sounds. So you add:

| | |
|---|---|
| low | bass |
| rumbling | booming |

Do this for each of your categories; that is, describe to yourself the range of each category and test your list for completeness along this range. Where you find the list deficient, add more words.

## A Checklist of Objectives for Sound and Hearing and Criteria for Completeness

Until now we have always given you a fairly complete checklist of objectives for each sense area. But in this chapter, we will primarily ask you to do the development of objectives yourself. We think that you will find you have the tools to do this task and that you won't find it at all difficult. As aids, you have as models the wordlist you just developed, plus its categories, and the checklists of previous chapters.

First you need a list of all the skill words used in the checklists of the preceding two chapters. These are the words that appear directly above each objective. Write this list here: it begins with "discriminate."

You can see that these skill words (or most of them, anyway) will apply to hearing as well as they did to touch and smell and taste. One way to see this is to form juxtapositions of skill words and categories. For example, suppose one of your categories is tempo.

Then we form two phrases:

discriminate tempos

order tempos

Finish the above list.

Each of these phrases may contain the core of an objective. "Discriminate tempos" becomes:

Given the sound of drums pounding or sticks clicking at different rates, the child should be able to discriminate the tempos by saying which sounds are fast, slow, or medium.

Similarly, "order tempos" becomes:

Given several segments of music, either recorded or produced by someone else, the child should be able to order these phrases from fast to slow.

Some of the phrases on your list may not suggest an objective to you. Or you may not think some appropriate for your children. That's fine! What's important is that you begin to get some ideas.

Continue constructing objectives from the two-word phrases for the category tempo.

You are now at an exciting point, that of deciding what areas of sound and hearing to include in the "curriculum" for your classroom. Obviously, you can't work with everything that is on your list of categories. But you can choose some of them. Choose three or four of your categories and continue the process of writing objectives for these categories.

In your training group, compare lists. See if there are important objectives that some people have which you also want to have. Some people may wish to argue that some categories are more important than others and should be included preferentially.

Criteria for Checklists

How do you decide whether your checklist covers all that is appropriate in terms of sound and hearing for your children? How do you decide whether individual objectives are worthwhile?

As you have been constructing your checklist and discussing it with your instructor and training group, these two questions must have been on your mind. Make a list of criteria that answer them. Try to be specific. Think of reasons why you rejected one objective but included another. Reproduce your list here.

## Diagnostics for Sound and Hearing

Observational Mode

Recall that in the observational mode of doing diagnostics, you are collecting information about your children as they carry on normal activities. You are especially trying to determine their level of involvement and, where it comes up, their level of functioning.

Look over your wordlist, categories list, and checklist. Think of questions you should have on your mind or points to look out for both while preparing for teaching sound perception and while you are teaching it. We have started this list for you. You should add at least four items.

1. Who are the whistlers and spontaneous singers? Which of these can carry a tune?

2. Who loves to make sound effects (e.g., while a story is being read)?

3. Who can hum along or sing snatches of songs? Which songs from what cultures?

4. Who can get up and move to different kinds of music? Which kinds of tempo?

5.

6.

7.

8.

9.

10.

Choose two of your observational questions and make a conscious effort to use them during two classroom days. Write what you find out here.

1. Observational Question

What I found out:

2. Observational Question

What I found out:

3. Something else in the area of hearing and sound that I noticed about my children:

Probing Mode

Here you are more able to assess a child's level of functioning. Recall your work in Chapter IV in constructing this kind of diagnostic. List below diagnostics for your checklist, at least one diagnostic in each category in which you make objectives. (You may find that, as you think of effective diagnostics, you want to add or revise objectives. That's both good and natural. This kind of work is always circular and never-ending.) Remember to include procedures for what you do if a child finds it easy and what to do if a child finds it difficult. Here are two examples:

Example 1

(See "discriminate tempos" objective given earlier.) If you have children, while sitting in a circle, do rhythm work together. You beat sticks at varying tempos, asking each child in turn to tell whether the sticks are going fast, medium or slow. If available, use drums from different cultures, i.e., African drums, tom toms, Japanese drums, etc. For children who find this very easy, vary the kind of rhythm as well as the tempo. For children who find it hard, make the slow tempos even slower and the fast tempos even faster and more animated.

Example 2

(See "order tempos" objective, given earlier.) Follow Example 1, but now play three segments at different speeds and ask children to say which was fastest and slowest. Note those children who are hestitant to do this ordering and work with them separately.

As in Example 1, you can make this more difficult by varying the rhythms, and easier by being more extreme with fast and slow.

Now you keep going here:

(Writing space continued)

Try doing all the probing diagnostics that you have devised on just two children. Pick two children who you think will show a great difference in results. Write your observations here.

Child 1

## Learning Experiences for Sound and Hearing

Probably you have plenty of ideas by now of activities to try with your children in this area. If you don't, let's see what help we can offer.

First you should certainly make a list of materials to use. Do that here. But before you start, look over the wordlist you made on page 71 again. As usual, we've put a few examples at the beginning.

shakers
tape recorder
piano
animals

Now, what are the kinds of activities that you can do with children which involve sound? Here is our list. Add your own ideas.

chanting
singing
rhythm with and without instruments
record listening using music from many cultures
storytelling with and without sound effects
instrument making and exploring
sound collecting on a tape recorder, perhaps by walking through different ethnic neighborhoods
sound collecting by hanging objects

Given all these lists (you've actually developed twelve of them in this chapter), you should be able to write plans for at least a dozen learning experiences. Pick six of the best and write them here. See if you can have it come out so that all your objectives are covered somehow. Don't get too elaborate in your writing. Write just enough so that someone else could get your idea and plan a lesson from it.

Discuss and share your ideas with other members of your group. As you begin trying out activities in the classroom, report your results and revise and expand your list of learning experiences.

LEARNING EXPERIENCES

# VI

# CHAPTER VI. SIGHT

## Objectives for the Learner

There are no specific objectives for this chapter. We have already listed (and we hope you have already mastered) all the teacher skills that we wished to develop. Then why include this chapter? Well, for two reasons: (1) as a practice ground for the skills you have been working on, and (2) so that you will have a teaching guide for visual sense perception once you have worked through the outline here.

As you work with children in a classroom, you cannot help but be involved with their visual sense perception. And you, almost inevitiably, help them to become keener visual perceivers as you talk to them about their block building, read picture books to them, give them art projects, and lead them through movement. (And, of course, in the same way, though perhaps not to the same extent, you are constantly helping them to develop their other senses.) But there are at least two important reasons for thinking self-consciously about teaching visual sense perception. First, you can develop methods to teach visual skills more effectively. Second, you can find areas of visual perception that you are neglecting but wish to emphasize more.

## Experiences in Vision and Wordlists

Vision is a sense with many aspects. To establish a broad base from which you can work, there are three separate and very different experiences here. After each experience, you are asked to develop a wordlist from what you have done.

Color Chart - Have you ever looked through the charts in a paint store that are supposed to help you choose a color. Each page shows many shades and hues of the same color, ranging from light to dark and as mixed with several other colors. Ask your paint store if they can give you last year's samples.

Choose two colors, plus white or black if you are feeling adventurous. Use small trays, bottles, or lids for mixing colors. The idea is to arrange many shades and hues on a piece of paper in some orderly way. You may wish to name some of your colors or mark them so you know how to reproduce them.

Are you working with a partner? If so, then try this game. Each of you mixes a color and asks the other to match it as closely as possible. You may wish to tell your partner which colors you used. Keep things simple the first time by using only two colors.

Make a list of color, light, and visual texture words here. Some categories you should include are: shades, colors, hues, lustre, methods of making color, and texture.

Experiences in Movement and Vision

Mirror Movements - You need a partner and some space for moving. You are going to mirror each other's movements. To start, stand facing each other, a few feet apart. One of you is the first leader. As the leader moves, the other follows, always keeping yourselves in positions as though you were looking in a mirror. After several minutes, switch roles. You may find after awhile that neither of you is leading, or that you are both leading equally. Great! You've "tuned in" to each other. Make sure you stay at this mirroring for at least ten minutes.

Write a description here of things you noticed about the other person's movements.

Make a list that describes movement in general. Don't limit yourself to purely visual words. Include speeds, size of movements, directions, relative positions, energy (like forceful or weak), kind of movement (walking, running), and whatever else comes to mind.

Experiences in Patterns and Symmetry

What we mear to introduce by this section is the whole area of visual symmetry, geometry and patterns, particularly those which are distinctive of different cultures. For the early childhood program, this area is most appropriately treated by collecting samples of different patterns (use resources such as prints, magazine articles, scraps of materials illustrating African, Hawaiian, Mexican patterns, wrapping paper, etc.) This collection may then be used in displays, discussions, as stimuli for paintings, children's stories, etc.

Record your activities as follows:

| Culture | Materials | Materials | Activities |
|---|---|---|---|
| A | | | |
| B | | | |
| C | | | |
| D | | | |
| etc. | | | |

## Developing Diagnostic Tools

Like objectives, the number of possible diagnostics for vision skills is vast. To make the work easier, divide up the writing of diagnostic tools among your training group. Don't forget to cover the four vision categories:

1. Colors and Visual Textures
2. Shapes and Sizes
3. Movement and Spatial Relations
4. Patterns and Symmetries

Your group will want to write two kinds of diagnostic tools for each vision category: (1) observational mode and (2) probing mode. In order to develop observational diagnostic tools, you need to have a set of questions about the materials being used and the child's level of involvement with them. (If you can't quite remember how to do this, go back to Chapter V and check the section on diagnostics, page 76.) Your whole training group may want to formulate these questions before you divide up in small groups to work on the actual diagnostic tools.

The space following is for writing down all the diagnostics your training group develops. You'll notice that the form asks for a follow-up procedure, as well as for the first diagnostic problem. Do you have a sense of the value of having a follow-up problem in your diagnostic procedure?

DIAGNOSTIC TOOLS DEVELOPED BY THE TRAINING GROUP

A. Colors and Visual Textures:

1.

a. problem (including materials to be used)

b. follow-up (if child solves problem easily)

c. follow-up (if child has difficulty with problem)

2. (as above)

3. (as above)

B. Shapes and Sizes:

1.

a. problem (including materials to be used)

b. follow-up (if child solves problem easily)

c. follow-up (if child has difficulty with problem)

2. (as above)

3. (as above)

C. Movement and Spatial Relations

(as in 1, 2, and 3)

D. Patterns and Symmetries:

(as in 1, 2, and 3)

When you finish writing the diagnostic tools, each person in your training group should select two to try with children. In the space below, write down the two diagnostics you're going to use in your classroom. (You may want to pick one in each of the two modes.)

| Diagnostic | Observational or Probing Mode |
|---|---|
| 1. | |
| 2. | |

Use these diagnostics with three children in your classroom. In the space that follows, write a description of what happened. Be sure to include any learning experiences you intend to provide as a result of the diagnostics.

## Checklist of Objectives

Have you begun to feel how vast the area of visual sense perception is? We think that the writing of objectives should be divided up among the members of your training group. One or two people may be assigned to each of the categories listed below. In your group meeting, share objectives, discussing their meaning, difficulty, and appropriateness. Use the criteria you developed on page 76. These should be especially useful in determining whether you have included enough, and whether individual objectives are worthwhile.

COLORS AND VISUAL TEXTURES

SHAPES AND SIZES

MOVEMENT AND SPATIAL RELATIONS

PATTERNS AND SYMMETRIES

## Creating Learning Experiences

Here we are, almost at the end of this sense perception guide. To conclude, you can use your imagination and your most pleasant memories to design, experiences for developing cognitive skills related to the vision sense. Don't forget the four criteria, though.

The learning experience should:

1. be fun, and rich in the variety of multiethnic materials presented,
2. make use of the Wordlist to suggest the dimensions of cognitive skills related to vision, in one or more languages
3. make use of one or more of the unit objectives, and
4. be useful in providing diagnostic information about the involvement level of your children with visual skills.

With those criteria in mind, write a list of five to ten ideas for visual learning experiences using multicultural materials. Then choose two and write them out in detail, including the number of children to be involved and all materials (see the chart below). Notice that the chart asks you to explain how the experience fulfills the four criteria.

CHART OF TWO VISUAL LEARNING EXPERIENCES

Experience 1

1. Description of experience:

2. How it fulfills criteria:

a.

b.

c.

d.

Experience 2

1. Description of experience:

2. How it fulfils criteria:

a.

b.

c.

d.

e.

## BIBLIOGRAPHY

Arnheim, Rudolf, Visual Thinking, Berkeley: University of California Press, 1969.

Elementary Science Study, Webster/McGraw-Hill. This series of teacher's guides is really excellent. The following units focus especially on teaching sense perception for young children: Attribute Games and Problems, Changes, Geo Blocks, Light and Shadows, Match Measure, Mirror Cards, Musical Instruments, Recipe Book, Mystery Powders, Pattern Blocks, Sand, Sink or Float, Tangrams.

Furth, Hans C., Piaget and Knowledge: Theoretical Foundations, Englewood Cliffs, N.J.: Prentice-Hall, 1969.

Hall, Edward, The Hidden Dimension, Garden City, N.Y.: Doubleday, 1966.

Hawkins, Frances Pockman, The Logic of Action, Mountain View Center for Environmental Education, 1969. A very deep book chronicling a master teacher's teaching and observation with deaf children.

Jorelan, D., Childhood and Movement, Oxford: Basil Blockwell, 1966.

Montessori, Marie, The Absorbent Mind, New York: Delta Books, 1972.

Science - A Process Approach, Xerox Education Division, Stamford, Conn. This curriculum project has much useful material on teaching sense perception.

# APPENDIX

Sample Receipes: Native American

Shared by Norman Kirschbaum

Selected from National Indian Council Cook Book

NAVAJO FRIED BREAD

4 cups flour
4 teaspoons baking powder
1 teaspoon salt
Milk to make of biscuit dough consistency.

Knead well as for yeast bread. Take 1/4 of dough at a time and roll to piecrust size(it will be thicker than piecrust). Cut into triangular pieces and fry in iron skillet in hot fat at least 4 inches deep. Best when hot.

ACOMA PAPER BREAD

Take 3 or 4 handfuls of cornmeal and a little salt. Add enough water to make a gruel. Cook until it is like porridge.

Heat a very big flat rock on open fire. The rock must be hot enough to make a drop of water fly off.

Take some of the dough and quickly wipe it across the rock. It cooks right away so peel it off when it ruffles on the edges.

The best paper bread is very thin.

CHOCTAW CORN DOGS

Use regular corn bread recipe but with only half the liquid. Add 1 cup chopped cracklings or chopped crisp bacon and 1 cup chopped onions.

Shape into balls, ping-pong size. Drop into deep, hot bacon fat. Fry until brown.

BAKED YAMS INDIAN STYLE

Roast with skins on under hot coals for about 1 hour.

ALEUT FISH PIE

3 cups boiled rice
3 large onions
4-5 hard boiled eggs
Butter, salt, pepper
2 large cans salmon or 4 cups fresh fish, cut up
Pie pastry

Line an 8" x 11" pan or pyrex dish with pastry. Cover bottom with a layer of boiled rice. Then sprinkle with half of the onions fried in butter and half of the eggs cut up. Spread these layers with the fish. Next add the rest of the onion and egg to cover the fish, another topping layer of rice, and a top of crust of pastry. Bake 45 minutes.

MONO BARBECUED SALMON

Dig a pit. Put some rocks inside and build a fire on them. When rocks are heated, cover hot coals with green leaves. Lay salmon on leaves and cover with another thick layer of leaves.

Now cover all with a thick layer of dirt. Let cook 5 hours.

Remove dirt carefully, then leaves. Makes most delicious salmon.

FISH TULALIP STYLE

Impale smaller fish on ironwood stick. Lean across a bed of coals or small fire. Turn now and then. Cook until done.

ROAST CORN CHOCTAW

Roast in shucks over or under coals.

## CALIFORNIA INDIAN ACORN SOUP

Make in fall when acorns are ripe.
Grind acorns between rocks.
Fan acorns with a fanning basket. (The fine parts will stick to the basket.)
Put the fine meal into a wooden bin.
Pour warm water over it 3 or 4 times to take out bitter taste.
Put acorn meal and water in a cooking basket (made of roots and willow)
Drop very hot rock into it. Keep turning rock with a wooden spoon.
Sometimes one rock will cook the soup.

## MIWOK BISCUITS

Make dough from acorn meal (prepared as for soup) and water. Roll into balls. Flatten. Bake on top a very hot rock.

## INTERTRIBAL INDIAN BREAD

3 cups flour
2-1/2 teaspoons baking powder
1 teaspoon salt
1 tablespoon sugar
2 tablespoons lard

Mix all with enough lukewarm water to make thick dough. Knead well. Divide into two parts. Roll to about 1 inch thick. Bake in greased pan at 375 degrees until done. Makes 2 loaves.

## BEAR FAT PASTRY CANADIENNE

1-1/2 cups flour, 1/2 tsp. salt, 1/3 cup bear fat.
Makes rich white pastry.

MANZANITA WINE MONO STYLE

Gather manzanita berries in high Sierras in July. Crush berries and remove seeds by shaking in a basket. Soak pulp 1/2 hour or so in water to cover it well. Put into a cone-shaped basket or colander. Pour the same water through the pulp many times until all the juice is extracted. Use as drink or sauce. Store extra juice for use later on.

CHOCTAW GREENS, ANNIE MARIE STYLE

Boil favorite greens about 45 minutes. When tender, drain and add 4 eggs. Stir well over very low heat until eggs are just cooked. Serve right away.

PUEBLO VEGETABLE DISH

Corn, onions, green pepper, squash.

Cut up onions and pepper. Boil in small amount of water about 15 minutes. Add whole kernel corn. Heat to boiling and add slices of squash (summer, crookneck, or zucchini) and cook until squash is just done. Season with salt. Serve.

MONO BARBECUED DEER

Dig a pit. Put rocks inside and build a fire on them. When coals are formed, cover with a piece of tin. Wrap venison in layers of butcher paper, then in a gunnysack. Place on tin and cover with another piece of tin. Build fire on top of tin. Let it burn for a couple of hours, then cover it well with dirt.

Next day about noon, uncover the meat and serve. Juicy and wonderful flavor.

OMAHA CORN CANDY "Washonyeh"

1 ear parched corn. Grind kernels and mix with enough honey to moisten. Add 1 cup chopped black walnut meats. Make into balls, moistening hands with oil so candy won't stick.

CHIPPEWA CORN-A-BOOB

Heat 1 can cream style corn with about 2 tablespoons bacon grease. Drop walnut-size dumplings in and cook until done.

MONO HUMMOGA

Soak equal parts of barley and wheat kernels for 20 minutes to 1/2 hour. Remove outer skin by rubbing. Let dry. Roll on flat rock until fine. Add crushed pine nuts for flavor. Serve with manzanita wine poured over it.

PICKLED BEAVER TAIL--CHIPPEWA

Cut tail from body. Singe over open flame until outer skin curls. Peel. Soak tail in salt water 2--3 hours. Boil in salted water until tender.
Marinate in vinegar, chill, use as needed.

OMAHA HOMINY

Cut boiling beef into bite-size pieces. Boil with your favorite seasonings for 1 hour. Add 1-1/2 cups dry hominy and cook for 1 hour more.

ZUNI BREAD

1 pkg. active dry yeast
1/4 cup warm water
1/4 cup melted shortening
1/2 cup molasses
2 teaspoons salt
2 cups cornmeal
1-3/4 cups hot water
4-1/2--5 cups sifted flour.

Dissolve yeast in warm water. Measure salt, cornmeal, shortening and molasses into bowl. Add hot water and stir until blended. Stir in 2 cups flour to make a thick batter and beat until batter is elastic, about 100 strokes. Add yeast and stir in 2-1/2 cups flour.

With floured fingers, work in enough additional flour to make a dough that does not stick to the hands. Turn dough onto floured board and knead about 100 strokes. Shape dough into a ball and place in greased bowl. Spread with shortening, cover, let rise in warm place until doubled in bulk (about 1-1/2 hours). Punch down and shape into a round loaf about 2 inches thick. Place on greased sheet, cover, and let rise until puffed (about 1 hour). Prick full of holes with an icepick. Bake at 400 degrees for 35--40 minutes.

Makes 1 large loaf.

Dough may be cut in half and shaped into 2 loaves about one inch thick. Bake at 400 degrees about 25 minutes.

YEAST FRIED BREAD

Use any good yeast bread recipe. When dough is ready to form into loaves, roll about 1/2 inch thick, cut into strips, and fry in deep fat.

CHIPPEWA WILD RICE

1 cup wide rice. Wash thoroughly in cold water
3 cups boiling salted water or meat broth.
Add rice to boiling water, cover, bake or boil very slowly until water is absorbed.

CHIPPEWA POPPED RICE

Pop rice as you would pop corn. Serve hot with milk or with butter as is done with popcorn.

WILD RICE CEREAL

Boil or bake rice until done. Serve as cereal with butter, milk and sugar, fruits, or with cinnamon, nutmeg, and cream.

CHIPPEWA WIDE RICE DRESSING

Parboil 1/2 cup wide rice 5--7 minutes. Drain saving liquid. Add rice to ordinary dressing, using rice liquid to moisten.

WILD RICE AND VENISON

Boil venison. On-half hour before serving, add wild rice and cook until done.

FRIED YELLOW CORNMEAL MUSH--CHEROKEE

Make your favorite yellow cornmeal mush and pour into loaf pan. Cool. Cut into slices and fry in butter or bacon fat until golden brown. Serve with butter and/or syrup, maple preferred.

INDIAN GREENS

Mix dandelion greens, lamb quarters, and wild mustard in amounts to suit yourself.

Boil a piece of salt pork in water enough to cover for about 1 hour.

Add greens and cook until tender.

BAKED FRESH CORN

Cut fresh corn off cob. Place a little pile or layer in center of a corn husk. Fold husk so as to make a small packet of corn. Bake in moderate oven until husk is brown.

OMAHA PARCHED CORN AND MEAT

1 ear dried corn. Remove kernels and parch with a little fat in frying pan. Oven-cook 1 pound chunk of round steak at 400-450 degrees until quite dry. Grind meat, mix with parched corn and salt to taste.

DRIED CORN INDIAN STYLE

1. Roast fresh ears in pit. Build fire in pit, cover with wet leaves, then add corn, cover well with leaves and dirt on top of that. Roast several hours until done. Cut corn off cob and finish drying in the sun. (Takes several days)

2. Same as above, only boil corn, then cut off and dry in sun.

3. Dry corn on the cob in the sun. Turn every day until thoroughly dry.

## ROAST QUAIL CHOCTAW STYLE

Freshly killed plump quail.

Gut quail leaving feathers on. Salt inside. Wrap bird in wet red clay, making a round ball. Roast in ashes and coals from hickory wood fire. Peel off clay (feathers come with it). Most wonderful eating.

## ALEUT BARBECUED FISH

Remove backbone of fish and flatten the meat. Cut into strips. Put a long, sharp stick between the skin and flesh of each strip. Sprinkle with salt. Stick one end of stick into ground, leaning it across a small fire with lots of coals. Cook until done.

## ROAST PRAIRIE DOG A LA CHOCTAW

Singe hair off over an open fire. Scrape off blackened hair. Cut the prairie dog. Barbecue over campfire until well done.

Also good for groundhog, woodchuck, rabbit and porcupine.

## MONO VENISON

Old style:

Slice thin, dry in sun. Store until needed. Then boil and serve with acorn soup, mush, or patties.

New Style:

Pound dried venison until not too fine. Boil until done. Add wild rice and cook until it is done. Serve very hot.

HOPI CAKES

1 pkg. active dry yeast
1/4 cup warm water
2 tablespoons sugar and 2 teaspoons salt
1/4 cup shortening
1-3/4 cups hot water
5--6 cups sifted flour
1 egg white
1/4 cup sesame seeds.

Dissolve yeast in the warm water.

Put sugar, salt and shortening into bowl; and hot water and stir until shortening is melted. Stir in 1 cup flour. Add yeast and 2 more cups of flour. Mix well. Flour fingers and work in enough additional flour to make a soft dough that does not stick to fingers. Turn dough onto floured board and knead for 100 strokes. Shape into ball. Put into greased bowl, spread surface with shortening, cover, and let rise until double in bulk (about 1-1/2 hours). Punch dough down and shape into walnut-size balls. Roll each ball as thin as paper into disks or ovals.

Brush with beaten eggwhite, sprinkle with sesame seeds and place on baking sheet. Bake at 425 degrees for 6--8 minutes or until brown. Makes 40 Hopi cakes.

MARIPOSA ENCHILADA PIE

7 tortillas, grated Parmesan cheese.
1 pound ground beef, 2 large onions (ground)
1 can chopped ripe olives, 2 cans hot sauce or chile sauce made from red peppers, salt pepper.

Brown meat in skillet. Add ground onions, mix and cook slowly with lid on about 15 minutes. Add chopped olives and mix.

Heat hot sauce in shallow pan.

Lightly grease casserole (round one).

Dip a tortilla into hot sauce and place in casserole. Sprinkle liberally with

CHEROKEE YAM CAKES

1 cup cooked mashed yams or sweet potatoes.
Add 1/2 cup cooking oil and 1/2 cup milk
Sift together: 2 cups flour, 2-1/2 teaspoons baking powder, 1-1/2 tablespoons sugar, and 1-1/2 teaspoons salt.

Add flour mix to yam mix, mix lightly with a fork. Turn dough onto floured board and knead gently about 12 kneading strokes until smooth. Roll about 1/4 inch thick and cut into rounds.

Place on greased sheet and bake 10--12 minutes at 425 degrees.

CHIPPEWA PEMMICAN

1 pound dried meat (beef or venison)
3/4 pound dried and crushed chokecherries.
Sugar to taste (add last)
Fresh suet enough to hold together.
Grind meat, berries, and suet in meat grinder. Add Sugar. Mix thoroughly and serve.

FRIED DRIED CHOKE CHERRIES SIOUX STYLE

Mash coke cherries, seeds and all.
Make into patties and sun dry.
Then take about 4 patties and put into a skillet with water. Cook slowly until water is absorbed and berries are like a dough, then dry in another skillet in hot bacon fat until heated through. Turn, sprinkle with sugar, and serve.

CHIPPEWA BOILED SAGE HEN

Gut bird and remove craw immediately after killing. Remove feathers. Boil slowly until tender. Thicken broth with flour. Season.

Grouse, Prairie Chicken, Rabbit, Squirrel are delicious cooked the same way.